REMARKS

Objections to the drawings

FIGs. 3, 4, 6A, 7, 8D, 8E, 9D, and 9E have been objected to because the y-axes in these figures should be labeled as denoting amplitude. Applicant has submitted replacement sheets with the filing of this office action response in which the y-axes of these figures are so labeled.

Prior art rejections

Claims 1, 10, 17, and 20 are independent claims, from which the remaining pending claims all ultimately depend. Claims 1-8 have been rejected under 35 USC 103(a) as being unpatentable over Kametani (5,091,948) in view of Prezas (4,561,102). Claims 9 and 14-16 have been rejected under 35 USC 103(a) as being unpatentable over Kametani in view of Prezas, and further in view of Petrushin ("Pitch-synchronous speech signal segmentation and its applications"). Claims 10-13 have been rejected under 35 USC 103(a) as being unpatentable over Petrushin. Claims 17-20 have been rejected under 35 USC 103(a) as being unpatentable over Kametani in view of Prezas, and further in view of Radova ("An approach to speaker identification using multiple classifiers").

Applicant has amended independent claim 1 to include the limitations of claim 9, as well as other limitations, and has cancelled claim 9. Similar limitations to claim 9 were already presented in independent claim 10, and Applicant has further amended independent claim 10. Independent claims 17 and 20 have been amended similar to the manner in which independent claim 1 has been amended.

Therefore, the claimed invention is limited to "adjusting boundaries of at least one of the first glottal event and the second glottal event" of an adjacent pair of glottal events "to minimize the pair-wise distance between the first and the second glottal events." So that the boundary adjustment is not considered as having just a statement or purpose of use or intent to minimize the pair-wise distance between the first and the second glottal events, Applicant has explicitly limited

the claimed invention "such that the adjusting the boundaries of at least one of the first glottal event and the second glottal event *results* in the pair-wise distance between the first and the second glottal events being minimized." As such, the reason "why" the boundaries are adjusted is to minimize the pair-wise distance between the first and the second glottal events of an adjacent pair of glottal events. Furthermore, adjusting such boundaries specifically and explicitly *results in* this pair-wise distance between the first and the second glottal events being minimized.

The Examiner found this limitation of the claimed invention (prior to amendment thereof) within the prior art specifically in Petrushin. (See, e.g., office action, paras. 12 and 17 as to claims 9 and 10.) Insofar as all the independent claims now include this limitation, Applicant presumes that the Examiner would now reject the independent claims over Petrushin alone or in combination with one or more other prior art references under 35 USC 103(a). Therefore, Applicant respectfully submits that the independent claims as have been amended are patentable over Petrushin alone or in combination with one or more other prior art references under 35 USC 103(a). Specifically, Applicant contends that Petrushin does not teach, disclose, or suggest the limitation for which it is being relied upon as teaching. As such, Petrushin either alone or in combination with one or more other prior art references does not teach all the limitations of the claimed invention, such that the claimed invention is patentable over Petrushin alone or in combination with one or more other prior art references under 35 USC 103(a). It is noted that Applicant is *not* attacking a single prior art reference (Petrushin) in countering a rejection made over a combination of references under 35 USC 103(a). *Rather*, Applicant is attacking *the combination of references* as a whole under 35 USC 103(a), by specifically contending that insofar as one of these references (Petrushin) does not teach, disclose, or suggest the limitation for which it is being relied upon, then any combination of references that includes Petrushin cannot be considered as teaching, disclosing, or suggesting all the limitations of the invention. Therefore, Applicant respectfully submits that it would be improper for the Examiner to simply

respond to Applicant's arguments presented herein that Applicant is just attacking a single reference, when this is in fact not the case.

With all that aside, Applicant notes that the Examiner has stated the following as to Petrushin in rejecting the claimed invention over Petrushin alone or in combination with one or more other references under 35 USC 103(a): "Petrushin discusses . . . adjusting boundaries of at least one of the first glottal event and the second glottal event to minimize the pair-wise distance between the first and second glottal events . . . (pages 325-326, the endpoints of the quasi-periodic segment are adjusted *to decrease the error between them*)." (Office action, para. 12.) Applicant respectfully contends two countering points, however. First, Applicant contends that Petrushin does not actually adjust the boundaries of two glottal events *to minimize the pair-wise distance between these glottal events*. Second, Applicant contends that Petrushin's adjustment of these boundaries does not, as to which the claimed invention as amended is limited, *result in the pair-wise distance between the two glottal events being minimized*.

First, reviewing pages 325-326 of Petrushin in detail reveals that Petrushin does not even discuss the distance between glottal events being minimized on these pages. Therefore, insofar as Petrushin adjusts the boundaries of two glottal events on pages 325-326, it is difficult to see how upon even casual inspection that this adjustment is made to minimize the pair-wise distance between the glottal events, where this adjustment actually results in this pair-wise distance being minimized. This is particularly the case where page 322 of Petrushin does discuss distance between glottal events. If Petrushin actually adjusted distance between glottal events on pages 325-326 to minimize this distance, where this adjustment actually results in this distance being minimized, then it stands to reason that Petrushin would say *something* about this distance being minimized. However, Petrushin on pages 325-326 does not even use the word distance (compare page 322, where Petrushin does use the word distance). Therefore, Applicant submits that in the first instance, Petrushin does not disclose adjusting the boundaries between two glottal events to minimize distance between them, where such adjustment results in such distance minimization,

where Petrushin does not actually even say anything about the distance between two such events being minimized.

Second, more careful review of pages 325-326 of Petrushin shows that Petrushin is actually adjusting the boundaries of glottal events *not* to minimize pair-wise distance as in the claimed invention, but rather to adjust the period *d* of a series of glottal events so that they are equally spaced in time, and not non-equally spaced in time. Petrushin specifically states the following on pages 325-326:

> First, let us consider the accuracy of quasi-period estimation. Let *d* be an estimated period in samples. The fundamental frequency is estimated using formula (5a). The average error of period estimation is one sample, which translates into average error of fundamental frequency estimation presented in 5(b).
>
> . . . .
>
> Now, let us consider the pitch-synchronous pitch evaluation algorithm. ***The problem is how to convert a sequence of non-equal spaced in time pitch estimates for quasi-periodical units into equal time spaced pitch values.*** Let $F_0^5[i]$ [be] the pitch estimate for the *i-th* quasi-periodical unit, and $F_0[k]$ [be] the pitch estimate for *k-th* equal time spaced interval. To estimate $F_0[k]$ we consider all quasi-periodical units that have non-empty intersection with *k-th* time interval. The pitch value is calculated as a weighted mean value using formula (i). If a quasi-periodical unit belongs to the time interval then its weight is equal to 1. For the partial (first and last) units their weights are $w_1 = 1 - r_1 / d_1$ and $w_{M_k} = r_{M_k} / d_{M_k}$ correspondingly.

(Emphasis added.) Thus, Petrushin adjusts the boundaries to adjust the period of a series of glottal events so that they are equally spaced in time, such that this adjustment results in the glottal events being so equally spaced in time. Petrushin does not adjust the boundaries to minimize the pair-wise distance between adjacent glottal events, where this adjustment results in these glottal events having their pair-wise distance minimized, as in the claimed invention.

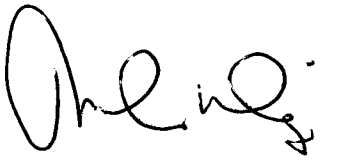
Indeed, one of ordinary skill within the art can easily contemplate a scenario in which the boundaries of a series of glottal events are adjusted in Petrushin such that their pair-wise distance is *increased*, not *minimized*, so that the glottal events in question are equally spaced in time. For

example, if the spacing between two given adjacent glottal events is smaller than the spacing between all the other pairs of adjacent glottal events, then you would *increase* the pair-wise distance between these two given adjacent glottal events so that all the adjacent glottal events are equally spaced in time. In this respect, pair-wise distance would *not* be minimized, in contradistinction to the claimed invention. Therefore, one cannot say that Petrushin's adjustment of the boundaries between adjacent glottal events even *inherently* results in minimization of distance between them. Adjusting boundaries between glottal events so that all the glottal events are separated from adjacent glottal events by equal spaces in time, as in Petrushin, is just not the same as adjusting these boundaries to minimize the distance between adjacent glottal events, as in the claimed invention. Thus, where the claimed invention's boundary adjustment specifically results in minimizing pair-wise distance, and where Petrushin's boundary adjustment does not specifically result in minimizing pair-wise distance, the claimed invention is patentable over any combination of references that includes Petrushin.

Conclusion

Applicants have made a diligent effort to place the pending claims in condition for allowance, and request that they so be allowed. However, should there remain unresolved issues that require adverse action, it is respectfully requested that the Examiner telephone Mike Dryja, Applicants' Attorney, at 425-427-5094, so that such issues may be resolved as expeditiously as possible. For these reasons, this application is now considered to be in condition for allowance and such action is earnestly solicited.

Respectfully Submitted,



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